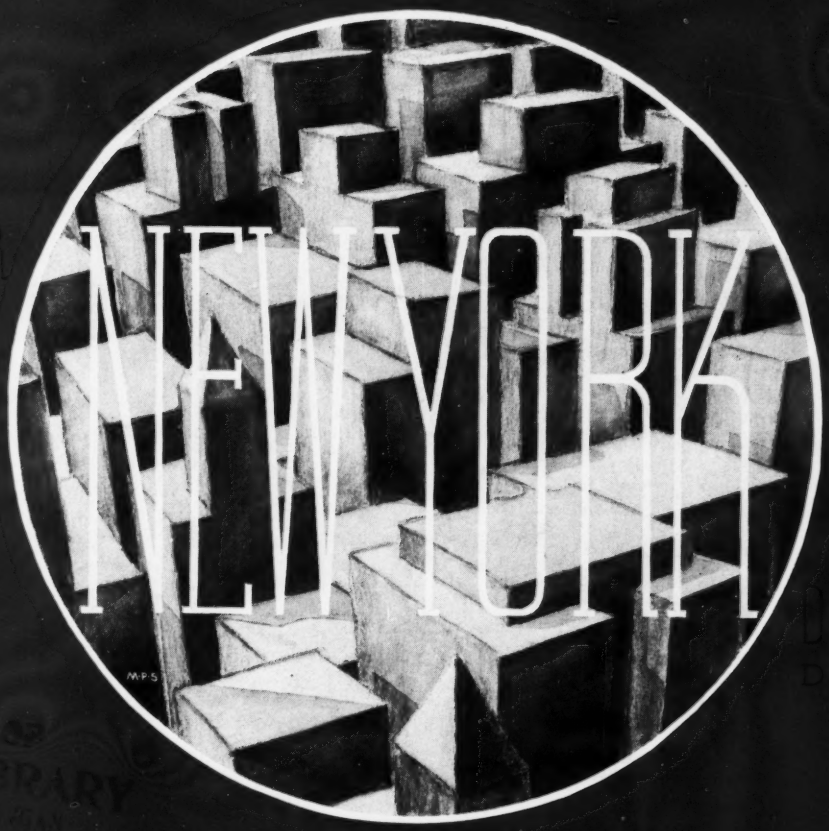
The DENTAL DIGEST



NOVEMBER, 1935
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DETERMINING THE CORRECT POSTERIOR PALATAL EXTENSION OF FULL UPPER DENTURES

H. J. LONGCAMP, D.D.S.
Aurora Indiana

IN MAKING full upper dentures it is the opinion of the best prosthodontists that the denture must terminate in the pterygomaxillary or hamular notch in order to obtain the best results.

It is comparatively easy to locate this notch on the posterior border of the denture when the tuberosities are prominent, but when they are obliterated by extraction or absorption, as is frequently the case, it is extremely difficult to determine the exact location in the mouth or on the impression or model.

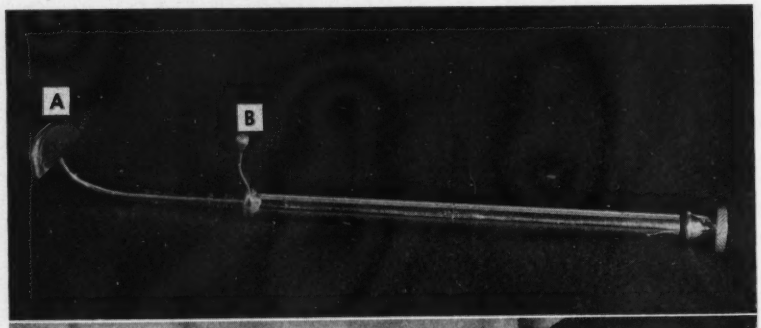
The tuberosity is the inferior angle of the maxilla articulated with the tuberosity of the palate bone. High up on the surface of the posterior border of the tuberosity, it gives rise to a few fibers of the internal and external pterygoid muscles.

In close relation to the tuberosity is the hamular process of the medial pterygoid plate of the sphenoid bone. This is an osseous structure not a part of the maxilla, and its consideration is of importance to the operator in denture construction. It lies posteriorly and medially from the tuberosity and forms a triangular space between these two osseous structures, in which there is a resilient pad of soft tissue, the only area in this part of the mouth that can withstand the pressure of the postdam.

The pressure of the postdam must vary with the depth and resiliency of this tissue. In order to apply this pressure accurately, therefore, the operator must study carefully this area over the soft palate from the tuberosity on the one side to the tuberosity on the other side.

From my own observations and those of other operators in using the postdam-meter, 95 per cent of all full upper dentures are short. This is due to one of two reasons: either the operator does not have a sufficient knowledge of the anatomy of this area where the denture should terminate, or he does not have an accurate method of locating this notch and transferring it correctly to the impression or model.

Up to the time I designed the postdam-meter, in the customary manner, I used a mouth mirror or



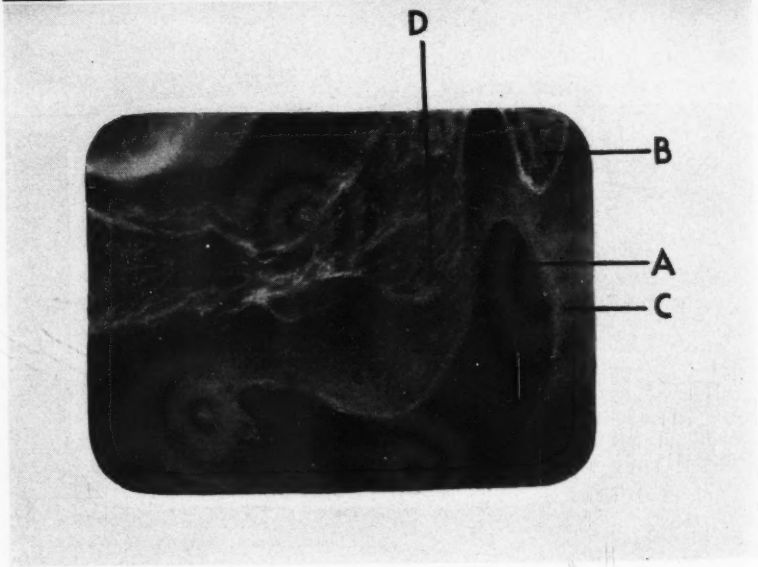
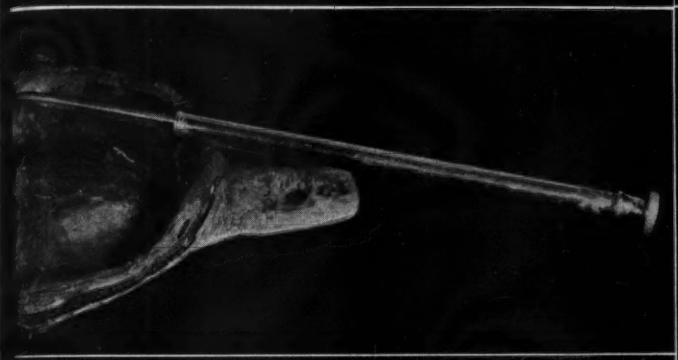
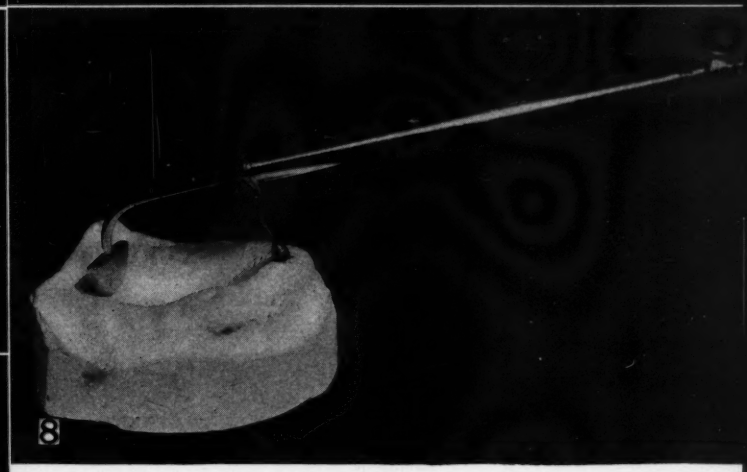


Fig. 1 (top)—The postdam-meter.
Fig. 2 (center)—Instrument in position in the mouth.
Fig. 3 (bottom)—A, Pterygomaxillary or hamular notch; B, styloid process; C, internal pterygoid muscle; D, maxillary tuberosity.





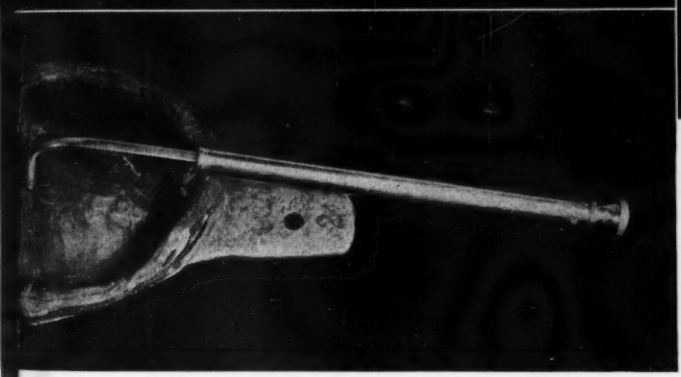


Fig. 4—Instrument in position on skull, showing the close relationship of the internal pterygoid muscle (indicated by arrow) to the hamular notch.

Fig. 5—Snap impression with instrument in position in the hamular notch area.

Fig. 6—Snap impression with instrument in position on the correct posterior palatal extension of full upper denture.

Fig. 7—Model with instrument in position in the hamular notch area.

Fig. 8—Model with instrument in position on the correct posterior palatal extension of full upper denture.

some form of instrument to locate this notch and then marked it with an indelible pencil and transferred it to the impression. This, however, was inaccurate because the saliva spread the indelible markings. I find the use of the postdam-meter the most accurate method of locating this notch and transferring it correctly to the impression or model.

The crescent-shaped part (A in Fig. 1) of the postdam-meter is made to turn so that it can be properly adjusted to fit in the notch. The notch is found by sliding this crescent-shaped part posteriorly along the crest of the ridge until it drops into a depression just back of the tuberosity and in front of the hamular process of the great wing of the sphenoid bone.

When this notch has been located the crescent-shaped part should be at right angles to the ridge; then with the ball-shaped part (B in Fig. 1) on the incisive papilla, found on the median line and on the anterior part of the jaw, one has an accurate measurement of the relation of the hamular notch to the papilla, in the mouth, and it can now be correctly transferred to the impression or model. Having thus registered the location of the notch on the one side of the jaw, the other side can be ascertained in the same manner and likewise registered on the impression or model.

After the exact location of the notch on both sides has been recorded on the impression or model, then the posterior margin of the hard palate is located by placing the crescent-shaped part of the instrument on the palatine foveolae, which are small pits near the posterior margin of the hard palate, one on each side of the median line; these usually mark the beginning of the soft palate; the ball-shaped part of the instrument is placed on the papilla. This measurement is likewise transferred to the impression or model. The three registration marks are now connected by a line, thus forming definitely the posterior border of the denture and the exact area for postdamming.

1-3 Gibson Building.

REMOVAL OF BROKEN NEEDLE FROM MANDIBULAR PTERYGOID REGION

FRANK F. McATEE, D.D.S.
Twin Falls, Idaho

THE removal of a broken needle from the mandibular pterygoid region has always been a difficult operation, often followed by severe trismus and almost always by sever laceration.

Causes of Broken Needles

1. Too rapid introduction of the needle and of the anesthetic causes the patient to move quickly to avoid pain. This movement will cause the needle to break. The patient should always be made aware that the mandibular injection is to be made, and the patient's eyes should not be closed.

2. Forcing the needle past an obstruction will break the needle.

3. Needles that have been straightened after having been bent will break. If a needle is slightly bent, it should be thrown away.

4. Excessive angulation of the needle may cause it to break. Care should be exercised not to bend the needle when changing angles.

Lateral Location of Needle

After one has had the unfortunate experience of breaking a needle during a mandibular injection, he should proceed as follows:

A roentgenogram should be taken on an 8 by 10 film at a right angle to the mandible at a point directly in line with the fragment. The mouth should be open as for the administration of a mandibular block; thereby the roentgenogram (Fig. 1A) will show the two sides of the mandible superimposed one upon the other. A true superior-inferior location of the needle fragment is thus obtained. This angle should be used in all subsequent roentgenograms.

Instruments Required

The following instruments are used:

1. A strong and rigid carpule syringe needle, preferably 23-gauge, called the guide needle.

2. A medium-sized hemostat, about 5 inches long with rigid handles and sturdy beaks. If the hemostat is too short, the "finger-holds" will be over the lower teeth and if it is too long, it will interfere.

Before operating the guide needle should be laid upon a smooth surface with the blades of the hemostat grasping one-eighth inch of the needle (Fig. 2, B), as it will be when used in the mouth.

3. A on Fig. 2, representing a line, drawn on a smooth surface, to serve as a basis for measurement. The length of this line is determined by the length of the fragment revealed in the roentgenogram.

4. Right and left needle extractors (Fig. 2, D). These are special instruments which I have devised. They consist of a shaft or handle about 6½ inches long with a curved or reap hook blade, one-fourth inch long from shaft to point and turned at right angles to the shaft. The blade is smooth and round on the back and slightly sharp on the inner edge. These instruments are not patented or protected in any way and anyone is free to make his own if he cares to do so; however, they are being manufactured and can be procured through supply houses.

5. Lancet. Place the lancet (Fig. 2, C) and the needle extractors (Fig. 2, D) beside the guide needle with their blade ends even with a location on the guide needle (Fig. 2, B), corresponding to the middle of the line representing the fragment. When the point of the guide needle is even with the point of the line representing the broken needle (Fig. 2, A), a mark (Fig. 2, E) can then be filed across the handle of each instrument or a narrow strip of adhesive tape may be be placed around each of the handles in order that when operating they can always be brought to the same position.

Anterior Posterior Location of Needle

1. With a 23-gauge needle in the ordinary carpule syringe the needle is inserted in the original site of puncture if discernible, or, the usual landmarks are used as in making a mandibular block, so as to bring the needle, which is termed the guide needle, into approximately the same position and parallel with the broken needle (Fig. 3). The operator should not, however, turn the guide needle in toward the inferior dental foramen inasmuch as he does not wish to anesthetize the inferior dental nerve but rather the internal tissues lying lateral to the mandible.

2. The anesthetic is slowly expelled, from the instant the needle enters the tissues until the point reaches a depth comparable to that of the broken needle.

3. The guide needle is now slightly withdrawn and the syringe is unscrewed from the hub; about one-eighth inch of the needle is grasped in the beaks of a medium-sized hemostat; the guide needle and handles of the hemostat are held in a straight line. It has been found advisable to substitute the hemostat for the syringe, because the size and shape of the syringe make it difficult to control.

4. The needle is now reinserted and a roentgenogram is taken (Fig. 4).

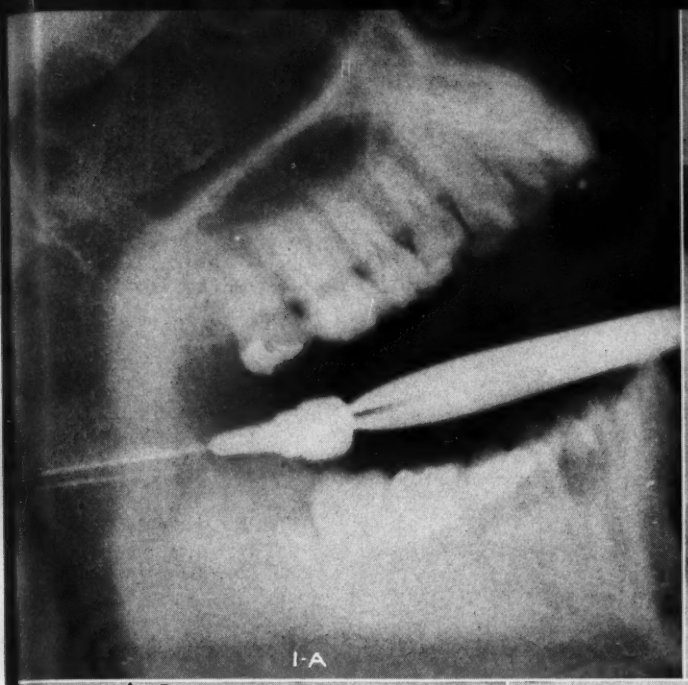
5. The guide needle is then corrected, so that it will lie in proper position parallel with the broken needle and with its point even with the point of the broken needle.

6. When this position is ascertained, the relation of the hemostat handles to the lower teeth is noted and a small piece of adhesive tape, one-eighth inch in width, is placed on the handle of the hemostat, labial to the lower anterior tooth over which the handle extends. This will act as a guide to prevent backward and forward movements of the hemostat and the guide needle.

Technique of Removal

1. With a sharp thin lancet, preferably one with interchangeable blades, make a half inch incision through the mucous tissues and into the underlying tissues, about one-half inch deep extending from the guide needle upward and inward, following the guide needle.

2. At a depth of one-half inch the blade may be reversed and the tissues separated with the back of the blade instead of the cutting edge until an incision one-half inch wide has extended to the middle of the broken needle (Fig. 5). The location will be indicated by the corresponding marks on the hemostat and lancet.



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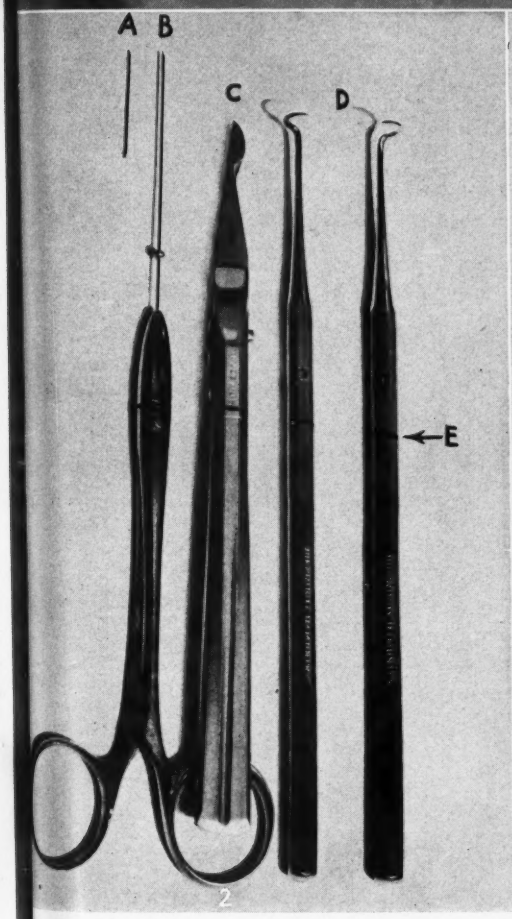

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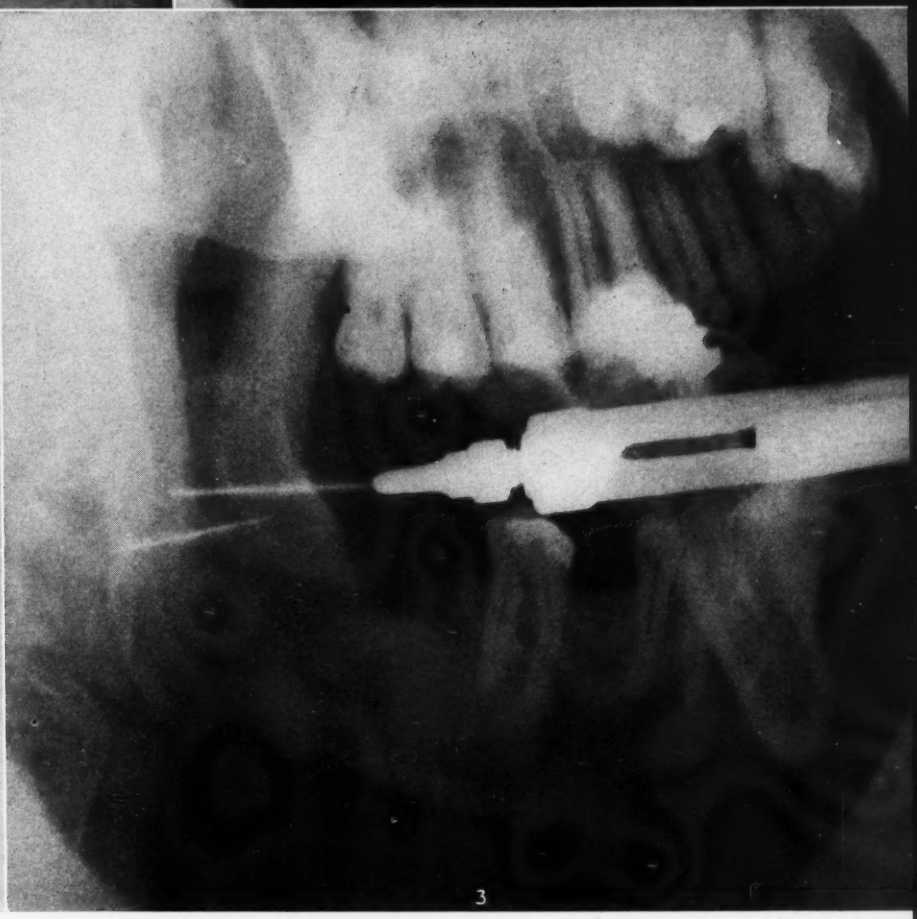

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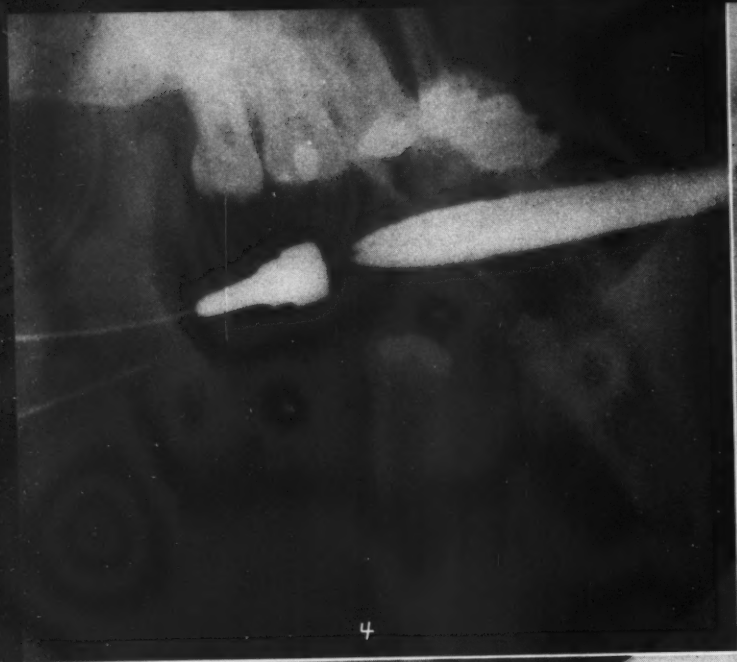
Fig. 1A—The two sides of the mandible are shown superimposed one upon the other. Roentgenogram was taken at right angles to the ramus of the mandible.

Fig. 1B—This roentgenogram as well as those represented in Figs. 3, 4, 5, 6, 7, 8, and 9 were taken **at an angle** to make clear the technique. This is not advised in practice. All roentgenograms in a practical case are to be made **at right angles to the ramus of the mandible** (Fig. 1A).

Fig. 2—The relative position each instrument should bear to the broken needle during an operation. By ascertaining the length of the fragment from a roentgenogram and drawing a line (A) to represent the fragment, the same length as the fragment, on a piece of paper or any smooth surface, the instruments can be so arranged that lines drawn across their handles will bring their blades into the correct relationship with the fragment during the operation. B, hemostat grasping guide needle; C, lancet; D, needle extractor; E, marks to indicate position of instruments.

Fig. 3—Guide needle brought into approximately the same position and parallel with the broken needle during the administration of the anesthetic.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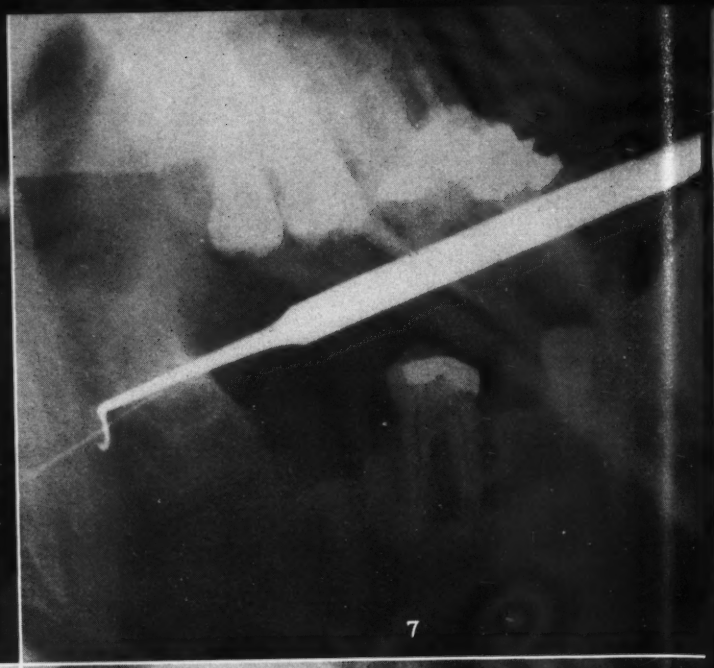
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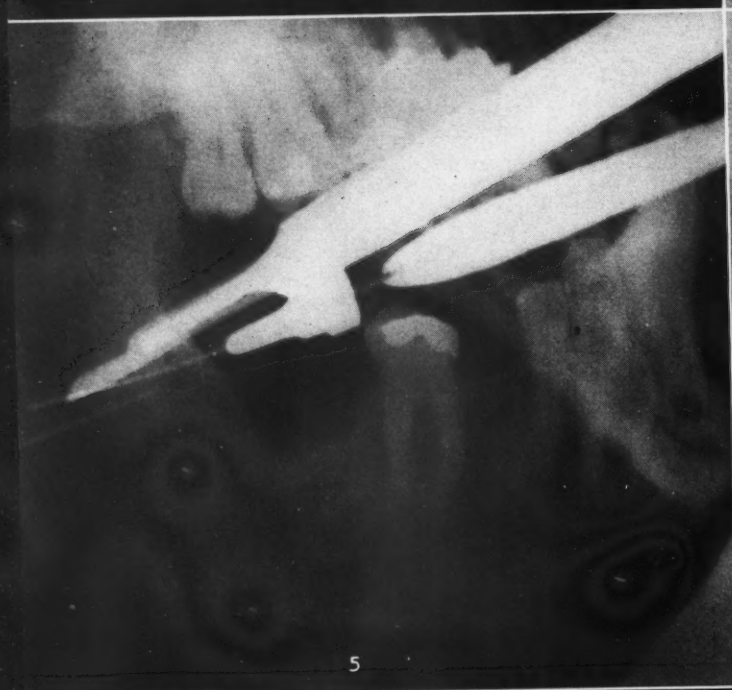
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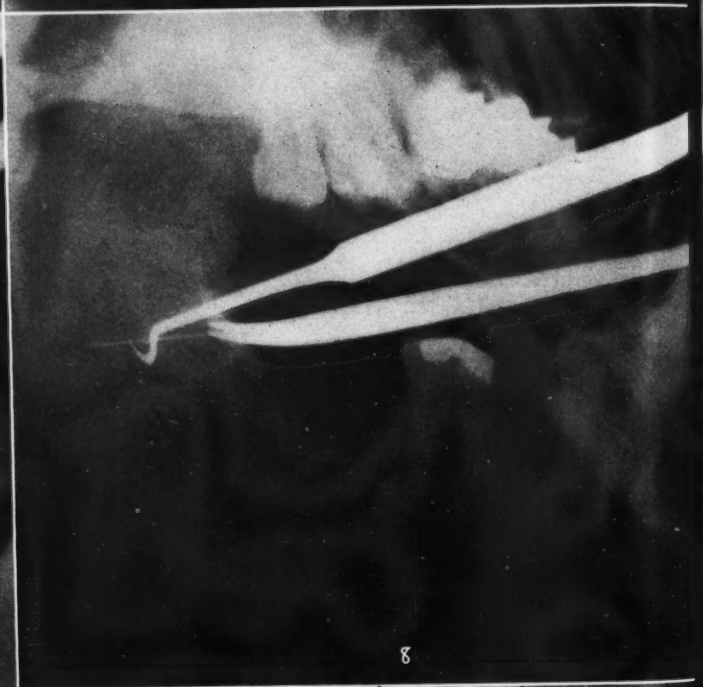
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Fig. 4—Guide needle reinserted for correction so that it will be in proper parallel position, with its point even with the point of the broken needle.

Fig. 5—Incision one-half inch wide extended to the middle of the broken needle

Fig. 6—Guide needle and broken needle resting in hollow of blade.

Fig. 7—Fragment hooked in extractor. Guide needle withdrawn.

Fig. 8—Hemostat grasping fragment.

Fig. 9—Mandible after removal of fragment.

In case the operator is not able to separate the tissues with the back of the blade, he will necessarily have to use the cutting edge. The incision will follow and be above the guide needle and will extend back through the tissues to the middle of the broken needle.

3. Insert the needle extractor, using the extractor that has the blade curved toward the mandible, and keep the point in contact with the guide needle by clicking the point across the guide needle as the needle extractor is introduced. Thus when the mark on the needle extractor arrives even with the mark on the hemostat, the operator will know the exact location of the point of the extractor and know that it is about in the center of the broken needle. The broken needle may lie either internal-laterally or external-laterally from the guide needle.

4. With the point of the extractor on the guide needle, rotate the extractor slightly backward; then extend the point internally and sweep it slowly and carefully in an arc around the guide needle.

5. If the operator thinks that the fragment is near the medial surface of the mandible, the point of the blade should be carried out until it touches the mandible.

6. The point is now drawn away from the bone about one-eighth inch before the blade is rotated any farther. Injury to the inferior dental nerves and vessels is thus prevented. If the operator does not block the inferior dental nerve there is little danger that the patient will allow him to injure the nerve.

7. Continue rotating the blade until the point is up and on a level with the shaft. This is indicated by noting the x marked on the lower part of the instrument handle which indicates the point of the blade. The hollow of the blade thus becomes a sort of cradle in which both the guide needle and the broken needle should rest (Fig. 6).

8. A roentgenogram is now taken to ascertain whether or not the fragment has been hooked.

9. If it has not, the extractor is gently backed around to the original position and the attempt made again. At all times the operator should work slowly and gently to prevent laceration of the tissues. It is well to call attention to the fact that the operator is not to cut through the tissues, but simply to pick up a quantity of tissue in which the guide needle and broken needle are embedded. Such separation of the tissues that may occur should be in the long axis of their fibers.

Most needles are broken off close to the hub, for it is here that they are usually bent and restraightening creates a flaw. I always endeavor to get the extractor as near the middle of the fragment as possible regardless of its length. If on lifting the extractor after the fragment has been hooked I find that the mesial end of the fragment does not raise the tissues, it is reasonable to suppose that the extractor is distal to the center. The extractor in that case should be withdrawn slightly and the attempt made again, because it is desirable to raise the mesial end of the fragment into the incision or raise the tissues in order that its location can be ascertained. The extractor, however, should not be too far mesial for it may slip off the fragment.

10. When the fragment has been picked up in the extractor, the guide needle is removed and the extractor gently raised (Fig. 7). Usually the anterior end of the fragment will appear in the incision or will raise the tissues so that the operator can see its exact location, and by making a slight extension of the incision the point will be brought into view.

11. If the fragment should be rather deeply embedded, a small hemostat can then be used to follow down the handle of the extractor with one beak on each side of the shaft until the blade of the extractor is reached.

12. It is a simple matter to grasp the fragment because it always lies almost parallel and internal to the shaft and always within the curve of the extractor blade.

13. If the operator has any doubt as to whether the hemostat is grasping the fragment, it would be well to take another roentgenogram before proceeding (Fig. 8).

14. If the operator has successfully grasped the fragment the extractor is returned to its original position and removed from the incision. At this point the operator should be extremely careful not to apply undue force, for needles embedded in the tissues for any considerable length of time become brittle.

15. Carefully proceed to remove the fragment; dissect away any tissue that prevents the easy withdrawal.

It has been found unnecessary to suture the incision unless it has been unusually extended externally. Trismus need not be expected if laceration has not been caused.

Smith-Rice Building.

COMPLICATIONS RESULTING FROM MULTIPLE EXTRACTIONS UNDER NITROUS-OXIDE OXYGEN

REPORT OF A CASE

DON E. WOODARD, D.D.S., M.S.D.
Kansas City, Missouri

History—October 1, 1934, a woman, aged 35, presented to her dentist and had seventeen teeth extracted under nitrous-oxide oxygen anesthesia. During the operation the left mandible was fractured at the angle. The patient was sent home and the dentist immediately communicated with me. He was instructed to send the patient to the hospital at once.

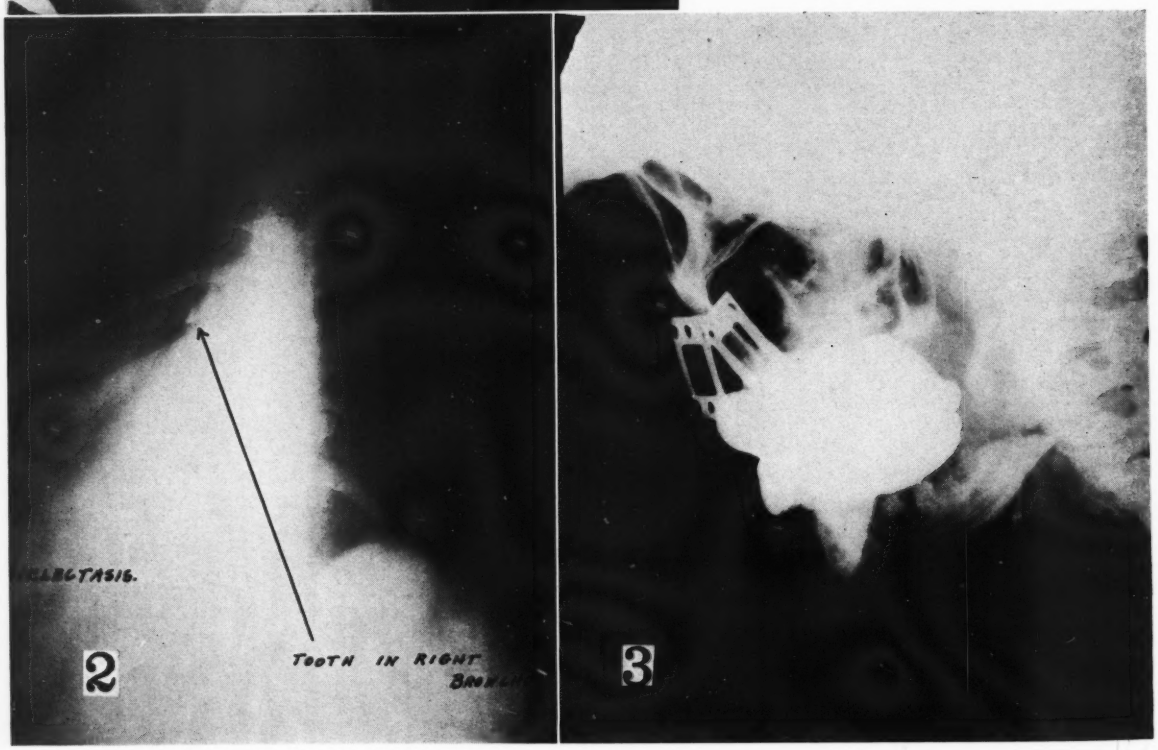
Examination—The patient presented on October 2 with many unhealed sockets showing recent extractions. On the lower left side there was a laceration which extended from the cuspid well up onto the anterior border of the ramus along the buccal fold. There were many fragments of loose bone and two root spicules in this area. There was a compound fracture of the mandible through the socket of the third molar at the angle.

Treatment—An operation was performed on the day of admission for the removal of the bone spicules and root fragments, and the suturing of

Fig. 1—Fracture of jaw following tooth extraction.

Fig. 2—Atelectasis. Tooth in right bronchus.

Fig. 3—Vulcanite splints in place. Fracture reduced and healing.



the laceration of the mucosa. Impressions were taken for the construction of splints and the fragments were placed in as near normal position as possible.

Course—There was a steady rise in temperature with typical septic fluctuation until October 4 when the axillary temperature reached 103.8° F. The medical consultant felt that the sepsis was due to the oral wound, but because of lack of inflammatory signs, the dental consultant was of the opinion that there were other factors involved. The temperature from this date onward followed the course of typical septic fluctuation.

October 6, a blood transfusion (750 cc.) was made and repeated the next day in the same amount. The patient was extremely ill and dehydrated.

October 9, a hypodermoclysis (500 cc.) was given.

October 11, there began to appear evidences of atelectasis.

Roentgenographic Examination—A roentgenogram of the chest was taken with the following report: First examination of the chest, with a portable x-ray apparatus showed a dense opasity involving the entire base of the right lung, extending up to the hilus and completely obscuring the shadow of the diaphragm. The heart was slightly retracted to the right and the upper portion of the right side of the chest showed some infiltration. The presence of a tooth was also noted. The tooth seemed to be either a lateral or a cuspid, lying in the right bronchus, approximately at the entrance to the middle lobe.

Roentgenologic Impression—Atelectasis was suggested with a probable lung abscess from the presence of the tooth in the bronchus.

On the evening of October 12, a bronchoscopy was performed; bloody pus was encountered in the right bronchus, and, because of its copious amount, the operator was unable to dislodge the tooth. Because the patient was in a critical condition, it was considered inadvisable to continue the attempt. Three hours later, during a severe coughing spell, the patient coughed up the tooth with a considerable amount of pus and mucus. The next day she was greatly improved but continued to cough up considerable pus. The temperature gradually returned to normal. From October 15 to 21 inclusive, the patient showed continual improvement.

October 22, the temperature was normal. The fracture was reduced and vulcanite splints were inserted and supported by an elastic bandage. There were slight variations in temperature but no acute exacerbations from this day on until the patient was dismissed from the hospital on October 28.

Comment

In all cases in which multiple extractions have caused complications, the consultant should never overlook any possibility in his attempt to trace the cause. Roentgenograms of the chest should always be taken to rule out the possibility of aspiration and to be sure that a lung abscess is not forming.

Many cases have been reported of aspiration of teeth and fragments. Other cases have been reported of fractures during an attempted extraction; however, this is probably the most unusual case of its kind on record, in that both complications developed in one patient.

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County of Allegheny, }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared M. B. Massol, who, having been duly sworn according to law, deposes and says that he is the Publisher of The Dental Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, publication manager, and business manager are:

Name of—	*Post Office address*—
Editor, E. J. Ryan, B.S., D.D.S.	708 Church Street, Evanston, Ill.
Publisher, M. B. Massol	1005 Liberty Ave., Pittsburgh, Pa.
Publication Manager, R. C. Ketterer	1005 Liberty Ave., Pittsburgh, Pa.
Business Manager, J. J. Downes	1005 Liberty Ave., Pittsburgh, Pa.

2. That the owners are:

Dental Digest, Inc.	1005 Liberty Ave., Pittsburgh, Pa.
Oral Hygiene, Inc.	1005 Liberty Ave., Pittsburgh, Pa.
M. B. Massol	1005 Liberty Ave., Pittsburgh, Pa.
Louise A. Smith	Schenley Hotel, Pittsubrgh, Pa.
Lynn A. Smith	1005 Liberty Ave., Pittsburgh, Pa.

3. That the known bondholders, mortgages, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

M. B. Massol, *Publisher*

Sworn to and subscribed before me this 28th day of October, 1935.

Geo. G. Berg, Notary Public

THE USE OF INTENSIFYING SCREENS IN DENTAL ROENTGENOGRAPHY

C. L. MEISTROFF, D.D.S.
Cristobal, Canal Zone

INTENSIFYING screens are used in roentgenography to save time, to intensify contrast, and to sharpen detail. Their routine use in dental roentgenography has not been undertaken until recently. There has appeared on the market an intra-oral casette with double screens for use in both mandibular and maxillary occlusal roentgenographic exposures.

The use of this small casette to supplant or to coordinate the use of the occlusal film pack prompted me to undertake investigation with regard to the application of intensifying screens to dentistry as a routine step.

The small screens were cut to conform to the size and shape of the film. Inasmuch as the films were double-coated, two screens were used. The films were of standard type.

The original packets were opened in the dark-room and reassembled, so that each new improved casette contained a film, two screens, a lead backing, and black light-proof paper. The packets were rewrapped in the original wrapper and held together with either small rubber bands or narrow pieces of adhesive tape. Every precaution was taken, so that the films and the screens were in close contact with each other and that the entire packet was light-proof, moisture-proof, and not too cumbersome.

Fig. 1A

Fig. 1B

Fig. 1—A, Used with screens; B, used without screens. Note the manner in which detail is removed from the film; observe the difference in the roentgenograms for the presence of caries; note the loss of fine distinction between dentine and enamel, and the loss of apical definition.

Fig. 2A

Fig. 2B

Fig. 2—A, Used with screens; B, used without screens. Note that the detail in the cancellous reticulations and the apical areas is missing. Note the flat end of the supernumerary root in both roentgenograms. The anterior nasal spines and the nasal passages are hardly visible.

Factors Considered in Experiments

The following factors were involved in these experiments:

1. Focal distance: 10 inches at skin contact.
2. K.V.P.: 45.
3. M.A.: 10.
4. Temperature of developing solution: 65° F.
5. Developing time: from 5 to 10 minutes with visual checkup every two minutes.
6. Exposure time: (a) upper molars (without screens), 8 seconds; (b) upper molars (with screens), 1½ seconds; (c) lower molars (without screens), 4 seconds; (d) lower molars (with screens), ½ second; (e) central incisors (without screens), 5 seconds; (f) central incisors (with screens), ¾ second.

Visual checkup was used instead of the time alarm because a better check on either underexposure or overexposure or processing was possible, inasmuch as the circumstances encountered here were not the same as found under ordinary working conditions.

The time factor was the only variable permitted; regardless of the time employed the results obtained were the same; the contrast was poor and there was loss of detail.

The areas of the upper and lower molars and of the central incisors were used because the casette could not readily be conformed to the angles of the mouth and the film could not be bent.

Results

1. Contrast was too great and too hazy to be of any interpretive value; there was too much black and white.
2. Detail was completely obliterated because the outlines were not sharp and there were no clean-cut margins; there was poor definition.
3. The various grays from light to dark were absent.
4. Incipent conditions, such as caries and alveolar crest involvement, were not visible.
5. Root canals in many cases were not discernible.
6. Interproximal calculus was not visualized.

Fig. 3A

Fig. 3B

Fig. 3—A, Used with screens; B, used without screens. Compare the following: apical detail; definition of root canal filling; differentiation between silicates and caries or dental tissue; cancellous detail.

Fig. 4A

Fig. 4B

Fig. 4—A, Used with screens; B, used without screens. Compare the two roentgenograms and note in B; exaggerated presence and extent of caries; loss of apical detail; detailed view of bone destruction in apical area is missing; lack of dento-enamel differentiation.

7. The interproximal embrasures were so intensified and the contrast between them and the gingival and proximal surfaces was so poor that incipient caries could not be interpreted.

8. Enamel and dentine differentiation was poor; one structure blurred into the other and each was of poor shade.

9. When caries was present, the extent and involvement were exaggerated.

10. Periradicular shadows were smeared and merged.

11. Intra-osseous structural detail (spaces and reticulation) were obscured.

12. In some cases the external oblique line was obliterated.

13. Packets were too bulky for intra-oral use.

14. Shadows that ordinarily are seen as gray tend to extreme blackness or to extreme whiteness, which accounts for the intense contrast observed. It is because of this that incipient disease is not easily recognized. Incipient proximal or occlusal caries, or caries below restorations are not seen.

We depend on these delicate color differences to assist us in differentiation. We look to this gray detail to reveal pathologic conditions by contrast against normal tissue and restorations. With the intensifying screens these valuable shadow gradations are obliterated.

The gray color imparted to enamel by incipient caries is completely blotted out. The intensity of the interproximal space is so great that in merging with the poor smeary enamel outline the value of this interpretive factor is removed. The hazy outline which is produced by poor enamel and dentine shadows prevents the recognition of caries in the enamel. Incipient caries in the dentine is also obscured by this lack of detail.

Summary And Conclusion

The use of the intensifying screen for intra-oral roentgenography is impracticable because of (1) loss of detail; (2) extreme contrast; (3) hazy outlines; (4) lack of definition. (5) Ordinary double-coated films give the best results. (6) The packets are too bulky to permit intra-oral use with sufficient comfort to the patient. (7) The varying range of color in the gray band is greatly limited; the extreme contrast robs the films of detail characteristics.

Colon Hospital.

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Don E. Woodard, D.D.S., M.S.D. had an article in this magazine in August, 1934, and again, in August, 1935. The former was on Necrosis Following Infiltration and the other was Osteomyelitis of the Jaw.

C. L. Meistroff's professional biography was repeated in the April, 1935 issue of The Dental Digest when his third Digest article was published (The Impracticability of Oral and Dental Steroscopy).

Michael Felsher received his D.D.S. from the University of Illinois College of Dentistry in 1929. He was assistant in histology at the University of Illinois in 1928 and assistant in the dental department of the Presbyterian Hospital from 1929 to 1931. Doctor Felsher is a member of the American Dental Association and has a general practice.

Samuel Charles Miller, D.D.S. (New York University College of Dentistry, 1925) is known to Digest readers for his article on Diagnosis of Lesions of the Oral Mucous Membrane (March, 1932) and his more recent contribution, A Simple Method For Improving Tooth Function and Fact Form (March, 1935).

Irving L. Rosof, D.D.S. (New York University College of Dentistry, 1928) has also appeared previously in these pages: The Reclamation of a Badly Deformed Dental Apparatus: Report of a Case (Janaury, 1933).

In October, 1934, Kent Kane Cross, D.D.S. (University of Denver, 1907) contributed an article to the Digest on the Medico-Dental Adjustment to our Changing Social Order.

COMPOUND IMPRESSIONS FOR PLASTIC PORCELAIN RESTORATIONS

MICHAEL FELSHER, D.D.S.
Chicago

TO REPRODUCE anterior teeth in their natural color and contour is the aim of every conscientious dentist. The restoration of these teeth with silicate porcelain is accepted everywhere as reliable and satisfactory. The technique, particularly for large and more complicated cavities, described in this paper is simple and has esthetic possibilities.

Porcelain restorations demand a definite technique, and failure to exercise extreme care will always produce poor results. The method described here will enable the operator to obtain excellent contour and good condensation of porcelain.

Technique

1. Following correct cavity preparation, it is sometimes advisable to use a gold anchor screw post gauge, number 9, on the portion of the tooth that needs additional support. This post is handled the same as an ordinary screw and inserted to the point where it is stable to finger pressure. The position of the pulp must be considered.

2. Inlay wax is used to reproduce the tooth in proper contour (Fig. 1).

3. After the wax is chilled thoroughly, it is oiled and a modeling compound impression is taken of the lingual surface, including the adjacent tooth on the mesial and distal (Fig. 2). The compound impression is chilled, removed, and trimmed properly as Fig. 3 illustrates.

4. A labial impression is taken with the lingual in position, sufficient oil being used on the lingual impression to act as a separating medium (Fig. 4).

5. Compressed air is used to harden the compound and both impressions are removed.

6. The lingual impression is grooved to permit the escape of excess porcelain.

7. The inlay wax is removed and the cavity completely cleaned and dried (Fig. 5). Cotton rolls are placed to insure dryness. A 10 per cent trichloracetic acid is deposited under the free margin of the gum tissue in the immediate area. This will insure perfect dryness.

8. The lingual impression is coated with cocoa butter, placed in position, and held by the assistant.

9. Porcelain is now mixed and placed into the cavity. The material is worked well into the undercuts. A slight excess of material is essential before placing the labial impression. Cocoa butter is also used on this impression before positioning (Fig. 6).

10. The impressions are held in position until the porcelain hardens (Fig. 7). Removal of the impressions leaves an almost perfect restoration

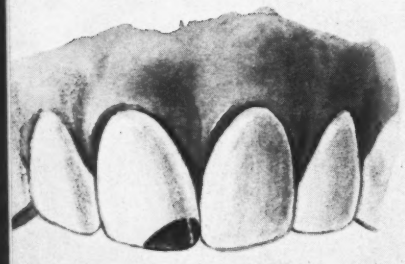


Fig. 1

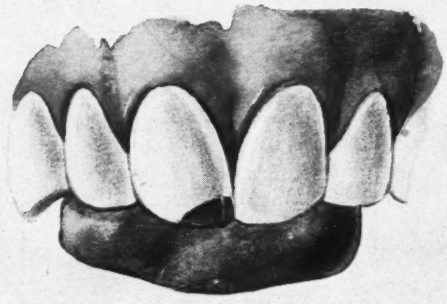


Fig. 2

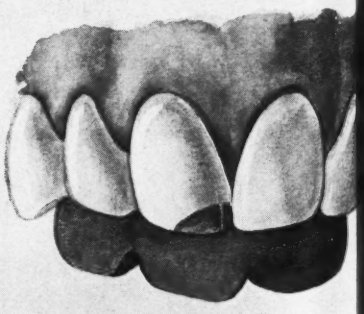


Fig. 3

Fig. 1—Tooth reproduced in inlay wax in proper contour.
Fig. 2—Modeling compound impression of lingual surface.
Fig. 3—Compound impression properly trimmed.
Fig. 4—Labial impression with lingual oiled and in position.

Fig. 5—Cavity cleaned and dried after removal of wax.
Fig. 6—Excess material coming through the channel made for the purpose (arrow points to channel), thus insuring perfect contour and good density.

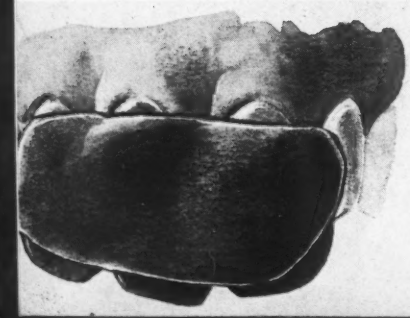


Fig. 4

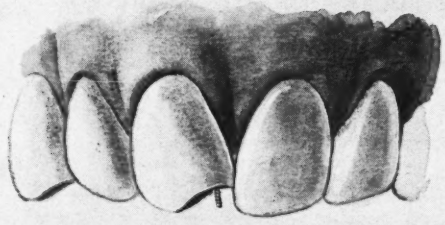


Fig. 5

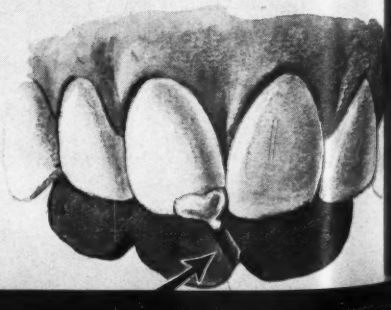


Fig. 6

Fig. 7

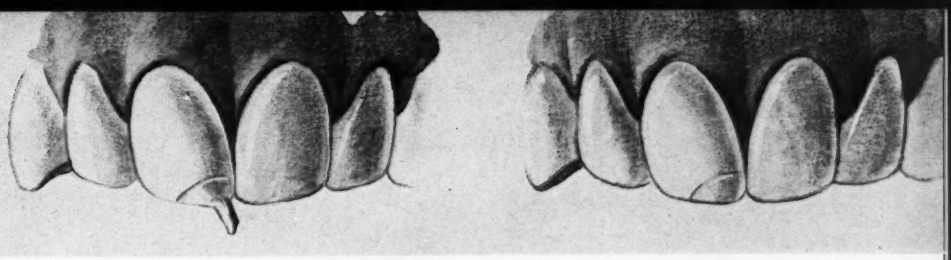


Fig. 8

Fig. 9

Fig. 7—Impressions held in position until hardening of porcelain.

Fig. 8—Restoration after removal of impression, with some excess material on incisal.

Fig. 9—Restoration after removal of excess.

Figs. 10, 11, and 12—Technique for large proximal cavities.

Fig. 13—Gingival cavity terminating under free margin of gum tissue.

Figs. 14 and 15—Pen point technique for gingival cavities.

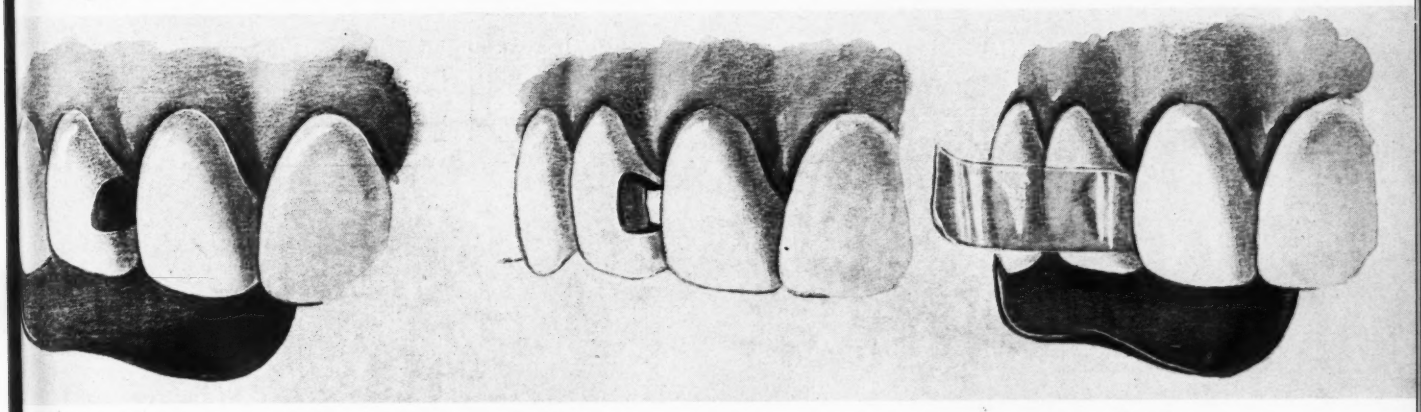


Fig. 10

Fig. 11

Fig. 12

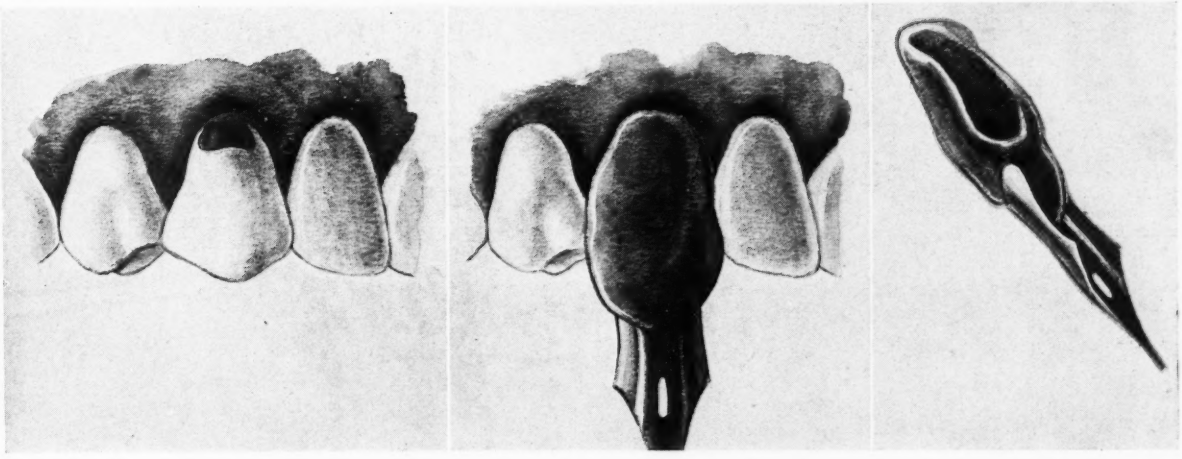


Fig. 13

Fig. 14

Fig. 15

with some excess material on the incisal (Fig. 8).

11. Sandpaper discs are used to remove the excess (Fig. 9).

12. Polishing is completed at the next sitting.

Technique for Large Proximal Cavities

Figs. 10, 11, and 12 illustrate the technique for large proximal cavities extending on the lingual or labial surface. A celluloid strip is used and carried around the labial, eliminating the labial impression from the technique already described.

Technique for Gingival Cavities

Frequently gingival cavities are encountered which terminate under the free margin of the gum tissue (Fig. 13). These cavities are best prepared by trimming and contouring a pen point which is used as a tray for the compound impression (Figs. 14 and 15). This pen point technique enables the operator to get a perfect impression of the cavity under the free margin of the gum tissue. The remainder of the technique is the same as that described under the general heading, "Technique."

In any case in which the incisal angle is being restored, the bite must be considered and the patient must be informed about the strength of the material.

55 East Washington Street

THE USE OF DENTA
FUNCTION

SAMU

AN ORIGINAL method of improving facial contour by occlusal equilibration was described in the March, 1935 issue of the DENTAL DIGEST.[1] The accompanying illustrations of two cases[2] show how the same principle can be applied to artificial restorations with equally gratifying results. In the first case the restoration was made for a woman, aged 42, and was completed in six weeks. In the second case it took three months to complete the restoration for a woman, aged 30. In this case the patient had previously had four bridges constructed on the

[1]Miller, S. C.: A Simple Method for Improving Tooth Function and Face Form. DENTAL DIGEST, 41:85 (March) 1935.

[2]Both cases were constructed by Doctor Rosof under the supervision of Doctor Miller.

CASE 1

Fig. 1—Profile view before treatment, showing the effects on esthetics of the sliding forward of the lower jaw into a mesio-occlusion with a decrease of the vertical height. Note the protruded lower lip, the deficiency in tone in the upper lip, and the pronounced facial lines at the corner of the mouth and nose.

Fig. 2—Full face view before treatment, showing the results of this type of malformation.

Fig. 3—Tooth view before treatment, showing the upper anteriors occluding lingually to the lowers. This was the patient's comfortable centric relationship. The amount of the overbite is governed by the posterior occlusion, because the decrease in vertical height and the amount of protrusion continue until the posterior teeth occlude. Note that the lower posteriors have an outside relationship to the uppers.

In order to give the patient an idea of the new tip-to-tip bite before treatment was undertaken, the incisal edges of the lowers had been ground from 1 to 1.5 mm. to flat incisal surfaces. Originally the incisal edges of the lower anteriors actually reached the line drawn on the upper teeth. The photograph was taken after the incisal edges of the lowers had been ground. The total overbite was originally from 4 to 5 mm.

Fig. 4—Tooth view showing the tip-to-tip position which the patient can readily assume. This indicates that the condyles are not in their most retruded position when the lower anteriors are occluding labially to the uppers. Note the amount of opening of the posterior teeth, which, in turn, is governed by the size and tip-to-tip bite of the anteriors. As previously stated, the lower anteriors had already been shortened from 1 to 1.5 mm. before these photographs were taken. The opening of the bite in the posterior region was from 4 to 5 mm. The patient can readily go into this position but the tendency is for the lower jaw to slip forward owing to the lack of occlusal balance in the posterior region.

Fig. 5—Tooth view showing the stabilization of the tip-to-tip bite by building up the posteriors to occlusion with cast gold crowns. The upper left second molar is crowned to occlude with the lower left second molar, similarly crowned. The lower right second molar is crowned to occlude with the upper right first molar which is not crowned. The lower left second bicuspid is crowned and the bite raised to the plane of occlusion. The patient is now able to protrude the lower jaw, but she cannot bring the lower teeth over the upper so as to decrease the vertical height.

Fig. 6—Tooth view showing the dentures in place in the mouth. The dentures are so constructed as to be in occlusion in the tip-to-tip position. This completes the stabilization of the lower jaw and the equilibration of the occlusion. The patient can protrude the lower jaw but finds the tip-to-tip position more comfortable.

Fig. 7—View of the restorations. The upper is a bilateral, all-gold denture and the lower is a bilateral all-gold denture with continuous clasps on the anteriors.

Fig. 8—Profile view after treatment, showing the retracted lower jaw, the increase in vertical height, the almost total eradication of the grooves at the corners of the mouth and the alae of the nose, accompanied by a general improvement in the facial appearance.

Fig. 9—Full face view, showing general improvement in appearance.

CASE 2

Fig. 1—Copy of a portrait which was made about years prior to the beginning of this work. This

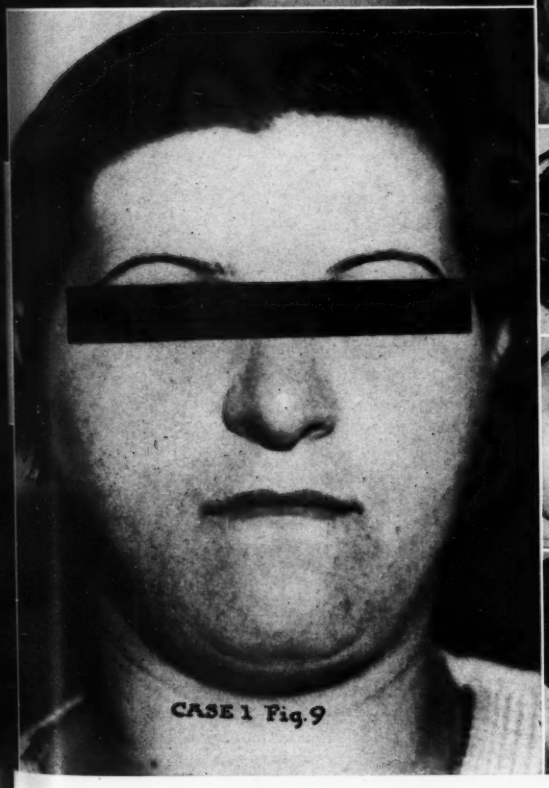
RATIONS IN IMPROVING
CIAL CONTOUR

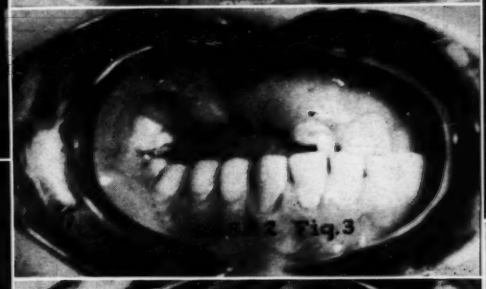
MILLER, D.D.S.

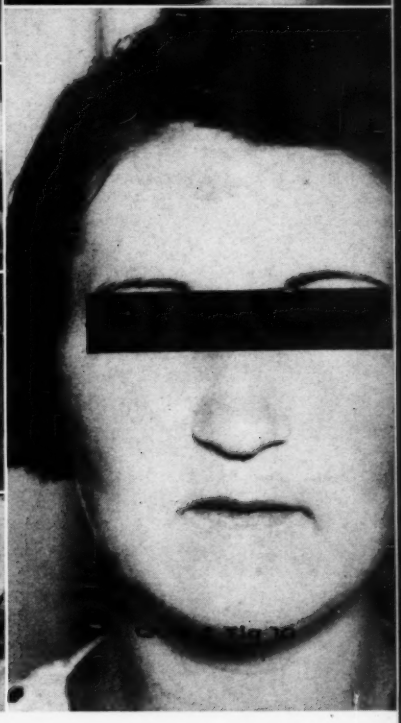
OF, D.D.S.
York

right side with the jaws in a protruded position and a decreased vertical height; none of the bridges lasted more than six months.

57 West Fifty-Seventh Street.
1065 Rutland Road.







d retouched photograph and does not show hat is wanted. No photograph was made at reatment was begun because the main interest e details of the restorations as they affected onship of the arches; this is, therefore, the operative facial record available. At the time treatment was undertaken, the effects were seen of the sliding forward of the lower jaw into a mesial occlusion with a decrease of the vertical height, protruded lower lip, deficiency in the tone of the upper lip, and the pronounced facial lines in the corners of the mouth and nose, similar to Case 1.

Fig. 2—Tooth view before treatment, showing a condition similar to Fig. 3, Case 1. Note that the incisal edges of the lower anteriors actually reached the pencil line on the upper teeth, as the photographs

(*Legends continued on page* 367)

ESTHETICS AS RELATED TO DENTURES

KENT KANE CROSS, A.B., A.M., D.D.S.
Denver

ALL dentistry relates at least indirectly to the appearance of the patient. The success of a dental restoration often depends on proper skill in oral surgery. Many a person tries to cover an unsightly mouth with the hand in conversation and laughter. More particularly the deaf, but generally everyone watches the mouth of the speaker and singer.

With the exceptions of the orthodontist and facioplastic surgeon who deal with unusually malformed and mutilated faces, the prosthodontist has more to do with facial and oral appearance than the other related specialties, because the importance in the restoration of form and color is greater.

Collapsed cheeks and lips, and unnatural proximity of the nose and chin are inevitable in the patient who by choice or force of circumstances remains edentulous. A majority of those who wear dentures have a collapsed facial appearance.

The prosthodontist, in his zeal to make a full restoration, may easily go to the other extreme, and give the patient the appearance of "a mouth full of teeth." This, in my opinion, is the only condition justifying the use of the term, "full denture." "Dentures" should imply complete dentures, not partial ones, unless distinguishing from those which are only partial in extent. *Complete* dentures would be the better expression.

The temptation is to fail to restore sufficiently facial and oral contour in dealing with patients who believe the loss of their natural teeth is concealed by small, inconspicuous artificial teeth. The patient may be temporarily pleased but effective restoration will not be accomplished.

Such a restoration is only partial, regardless of the number of prosthetic teeth used. If one considers a normal restoration as 100, the percentage often diminishes to less than 50, in a year or so, if the underlying ridge tissues of the denture (basal) area have not reached their limit of absorption at the time of insertion of the dentures.

Fig. 1—A, before; B, after. Mrs. E., aged 78. The pits and furrows due to advancing age and poor dentures have been almost eradicated; the patient looks scarcely 65 with her new dentures—"complete," but not too "full."

Mrs. E's. old and new dentures. Unusual "plumping" was necessary.
Fig. 2—A, full front view; B, three quarter view.

Selection of Teeth

Harmony in dental color relates primarily to complexion. Yellowish, deepening into orange is becoming to the blond type. The neutral grays are characteristic of the dental colors of the brunette persons, producing a harmony of contrast. A blending of colors occurs in the dental make-up of persons of medium complexion, who may have light brown, hazel, or gray eyes.

Thin teeth are more translucent. The vulcanites give a more opaque effect to porcelain teeth than do the newer, translucent denture base materials.

"Get the dark one" is a pretty safe rule when choosing between two dental colors, inasmuch as porcelain teeth show artificiality from their gloss and their comparative lack of translucency. A row of these at once suggests "false teeth."

Selected with the inverted face form as the guide for the maxillary central incisor tooth form, the extracted central should also be used as a guide if it conforms to the face form; otherwise, one should not attempt to restore the natural appearance but improve on it.

The device of the so-called staggering of related colors may be used, when it is desired to reproduce some of the discoloration of the lost natural teeth. Stains, including crosswise or linear striations, may also be employed to offset the stock appearance of the new teeth.

Alinement of Teeth

A "pretty set of teeth," prosthetically speaking, is dangerous publicity, unless the patient is a particularly beautiful woman—then it may be risked. In other words, the denture supplied should harmonize with the general appearance of the patient. Since it is not within our province to change the whole countenance, including the bony background, teeth should be alined accordingly. Pretty, even teeth are not harmonious, just as the gaudy dress is not becoming to the shapeless wearer. Each simply attracts to existing disharmony. Irregular and overlapping teeth are often indicated in the alinement for the more or less homely, regardless of the patient's statement about her "own even, white teeth." Tactfully, it can be suggested that evenness emphasizes artificiality and slight irregularity duplicates a condition of most sets of natural teeth.

With two or more shades and molds to select from, alinement should be completed in the presence of one or more members of the family. It is their right, as those who have to look at the teeth as a part of the family to have a voice in the selection. This is partly for the protection of the dentist, and it gives him a chance to explain the principles of esthetics as applied to the case at hand.

Even men who "don't care how they look," may become sensitive to continued criticism afterward, and it is frequent that complaints are made after approval of tooth selection and set-up.

The patient's face, temperament, and experience should be observed at each appointment.

Summary

1. All dentistry deals at least indirectly with appearance.
2. Collapsed features are the penalty of remaining edentulous.
3. Most dentures only partly restore the contour of lost oral tissues; a few show too much fullness of dentures.
4. In the selection of dental shades in prosthetics the darker, rather than the lighter shades are preferable as they are less conspicuous and less artificial looking.
5. Face form should harmonize with tooth form.
6. Shade harmony, in the same tone, may be accomplished, with some variation, but this must be skillfully done.
7. Only in the beautiful should the operator hazard an even alinement of the anterior teeth.
8. Completion of selection and alinement of the teeth should be done in the presence of some member of the patient's family. This gives the prosthodontist an opportunity to explain the artistic details of the case.
9. The patient's features, temperament, and experience should be observed at each appointment.

4040 East Second Avenue.

THE USE OF DENTAL RESTORATIONS IN IMPROVING FUNCTION AND FACIAL CONTOUR

(*Legends continued from pages* 364 *and* 365)

were taken after the incisal edges of the lowers had been ground down from 1 to 1.5 mm. to flat incisal surfaces. The total overbite was originally from 3.5 to 4 mm.

Fig. 3—Right side before treatment, demonstrating that the amount of overbite is controlled by the occlusion of the posterior teeth.

Fig. 4—Left side before treatment.

Fig. 5—Tooth view showing the tip-to-tip position which the patient can assume. All conditions are similar to Fig. 4, Case 1. As previously stated, the lower anteriors had already been shortened from 1 to 1.5 mm. before these photographs were taken. The opening of the bite in the posterior region was originally from 3.5 mm. to 4 mm.

Fig. 6—Tooth view showing the stabilization of the tip-to-tip bite by means of fixed bridgework and the building of the posterior occlusion. This completes the stabilization of the lower jaw and the equilibration of the occlusion. The patient finds this position a comfortable one. At the time of construction the patient could protrude the lower jaw but could not bring the lower anteriors over the uppers to decrease the vertical height; however, at this writing, it is almost impossible for the patient to protrude the lower jaw, owing to the fact that her muscles have been trained to accept the new position as the more natural one.

Fig. 7—Tooth view of the **right** side. The upper bridge consists of a cast crown on the first molar, which increased the clinical crown of that tooth so that it reaches the plane of occlusion; a cast base crown on the right central, and a three-quarter crown on the left central supplying the lateral, cuspid, and two bicuspids.

Fig. 8—Tooth view of the **left** side. Here the second bicuspid has drifted distally to approximate the first molar and has left enough space between the bicuspids to insert another tooth. Both bicuspids carry cast onlays built to the plane of occlusion by increasing the clinical crowns of these teeth.

Fig. 9—Three-quarter view of the patient taken at this writing, three years after treatment.

Fig. 10—Full face view of the patient, showing the improvement in appearance. This photograph compared with Fig. 1, Case 2 readily shows the improvement that has taken place.

ACCIDENTS DURING INJECTIONS: AN ABSTRACT OF CAUSES AND PRECAUTIONS

1. Major, De Waters, and Bell[1]:

REASONS FOR BREAKING NEEDLE DURING COURSE OF INJECTION:

a—Faulty technique on the part of the operator.

b—Poor cooperation on the part of the patient.

c—Improper selection of needles.

d—Faulty needles.

e—Use of needle of too small caliber (in deep injection).

f—Excessive angulation of needle during deep injection.

g—Excessive force exerted when needle tip meets obstruction.

h—Lack of knowledge of anatomy of region.

2. Seldin[2]:

PRECAUTIONS AGAINST BREAKING NEEDLES:

a—The needle selected should at all times be 1 cm. longer than the total depth to which it must be inserted. A short hub is preferable to a long one.

b—Lateral pressure should not be used on the shaft.

c—The direction of the embedded needle should not be changed without first withdrawing it until only the point is engaged in the tissues.

d—Rusted needles are better discarded than used.

e—For long insertions, one should be careful to employ a needle of sufficiently heavy gauge; in general, the longer the needle the thicker it should be.

f—It is well to caution the patient not to jerk or shift at the time of insertion.

g—In palpating with the point of a needle, simple contact is sufficient. It is not necessary to force the needle into the bone.

h—An injection should not be begun without having at close hand and within easy reach a serrated thumb-forceps for the purpose of grasping and extracting that part of the broken shaft extending beyond the surface. The palpating finger should not be removed from the tissues, because the tissues might spring back and cover the broken end.

3. Feldman[3]:

RESPONSIBILITY AND PREVENTION:

a—During the induction of a mandibular anesthesia the possibility of the fracture of a needle should always be kept in mind by the operator—this is the best way to prevent the accident.

b—If a patient suddenly moves, it is because of the painful introduction of the needle. The patient is seldom if ever at fault when a needle fractures.

c—Mandibular needles fracture when they become engaged in the muscle or in the periosteum lining the inner surface of the ramus; in other words, faulty technique is responsible.

d—Faulty construction of needles: Thin steel needles should not be used; they are too brittle. A poor joint at the junction of the needle with the hub may cause it to break. Needles made of platinum-iridium or of nonrusting material are best. A needle of great flexibility that is not soldered to the hub is preferable.

4. Mead[4]:

CAUSES AND RULES:

a—Movement of the patient may cause the needle to break; but this should be anticipated and guarded against.

b—Especially in deep injections the needle should not be inserted up close to the hub.

c—Lack of familiarity with the technique is the cause of broken needles in most cases.

d—There should be no resistance to the injection of the solution in nerve-blocking injections.

e—The needle should not be bent in the process of injection.

f—A needle of sufficient length should be used, so that there is sufficient safety margin unembedded in tissues by which it can be removed.

g—At least a 42 mm. needle 23-gauge or larger, should be used in all nerve-block injections except the posterior palatine and incisive.

5. Fisher and Grossman[5]:

CAUSES AND SUGGESTIONS:

a—Mainly thin needles have been observed to break: (Williger recommends the use of heavier needles for mandibular injection, especially one about 5 cm. long. Braun also recommends a long needle which is more likely to break at the end so that a piece always projects from the tissue.) Even a thick needle may break. Thin needles are more likely to become encapsulated and therefore present a greater danger of infection.

b—Breakage is usually due to faulty technique of injection.

c—Removal of the fragment should not be attempted without certain technical and typographic knowledge.

[1]Major S. G.; DeWaters, R. S., and Bell, J. R.: Removal of Broken Dental Needles, DENTAL DIGEST, 40:419 (December) 1934.

[2]Seldin, H. M.: Practical Anesthesia for Dental and Oral Surgery, Philadelphia, Lea & Febiger, 1934, page 270.

[3]Feldman, M. H.: A Manual of Exodontia, second edition, Philadelphia, Lea & Febiger, 1930, page 208.

[4]Mead, S. V.: Anesthesia in Dental Surgery, St. Louis, The C. V. Mosby Company, 1935, page 455.

[5]Fischer, Guido; and Grossman, L. I.: Philadelphia, Lea & Febiger, 1933, page 64.

The Editor's Page

DENTISTS who engage in exodontia do have accidents, although infrequently, in the form of aspiration of teeth, tooth fragments, restorations or appliances during the induction of general anesthesia. In the case of the administration of local anesthesia the most common accident is breaking of the needle used in the injection.

In this issue Doctor Woodard describes serious sequelae and the formation of a lung abscess that followed the aspiration of a tooth, whereas Doctor McAtee describes an original technique for the removal of broken needles when such accidents occur.

Objects in the lung have been the occasion for suits for damages and malpractice filed by patients. In such cases there is some difference of opinion in the courts on the question of liability. Courts recognize that accidents in the course of human affairs are common and frequently unavoidable. To establish the fact of a mere accident is not enough in the eyes of many courts but negligence must be proved. This principle that negligence must be proved holds true in the case of broken needles as well. Unavoidable accidents of this nature are, however, frequently looked upon unfavorably by a jury. Although negligence might not be proved and experts might testify that ordinary care and skill were used by the dentist, it is sometimes extremely difficult to convince a jury of these facts.

The preventive effort against accidents during general anesthesia is a rather simple one; namely, the use of mouth packs to form a partition between the pharynx and the mouth and between the dorsum of the tongue and the soft palate during the induction of general anesthesia. Seldin[1] describes a simple mouth pack which is readily available or can be made by the operator or his assistant. Seldin likewise suggests two other functions of the mouth pack: It prohibits the swallowing of blood and mucus, which prevents some of the postoperative nausea that might otherwise occur; and second, the mouth pack helps maintain the concentration of anesthetic gases by preventing the inspiration of air through the open mouth. In other words, the mouth pack is both a safety device and an aid to the efficiency of the anesthetic.

This discussion naturally suggests the subject of liability insurance. If the insurance principle that protection against large hazards and carrying the small hazards oneself is sound, it would appear that some form of liability insurance to protect the dentist against malpractice suits is advisable. There are two advantages in carrying recognized forms of liability insurance. First, the insurance companies that are particularly interested in this field of insurance have the facilities and the talent to present cases in court in a manner that protects the defendant from needless embarrassment and publicity. Second, the insurance is a protection of the assets of the professional man should the findings of the courts be unfavorable and judgment be entered against him. This type of insurance gives the dentist a tranquillity of mind.

Finally, should an accident occur during the administration of either a general or local anesthetic, consultation should be had with experts to determine in the case of an aspirated object whether a bronchoscopy should be performed immediately and in the case of a broken needle to be sure that the fragment is removed as quickly and as skillfully as possible—before the roentgenogram falls into unfriendly hands.

On the opposite page we have prepared a table showing the opinions of several authorities on the causes and prevention of broken needles.

[1]Seldin, H. M.: Practical Anesthesia for Dental and Oral Surgery, Philadelphia, Lea & Febiger, 1934, page 387.

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